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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,251	05/10/2005	Daniel Kortvelyessy	2002P03595WOUS	8745

7590 09/20/2007

Siemens Corporation
Intellectual Property Department
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EXAMINER	
YAKULIS, JEFFREY C	
ART UNIT	PAPER NUMBER
1753	

MAIL DATE	DELIVERY MODE
09/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,251	KORTVELYESSY ET AL.	
	Examiner	Art Unit	
	Jeff Yakulis	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/8/2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/8/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kool et al (6,599,416) in view of Rines (2,744,860).

Regarding claim 10, Kool et al. teaches an electrochemical stripping system [1] in which electrodes [4, 5] and the article/component [6] are arranged in a receptacle [2] and submersed in an electrolyte [3] (col. 7 lines 6-24) and the electrodes [4,5] and article/component being connected to a power supply/current generator [10] for imposing a potential difference between the article/component [6] and electrodes [4,5] (col. 7 lines 51-63). The current/voltage source may be of the pulsed variety allowing for means of connection to a pulse generator (col. 8 lines 8-17) but fails to disclose an ultrasound probe being arranged in the container and submersed in the electrolyte.

Rines teaches treatment of a cathode surface [7] submersed in a plating solution [3] with another electrode [5] and a mean for vibrating the plating solution perpendicular to the cathode [7] (col. 5 lines 11-30). Rines further teaches the use of ultrasonic generators disposed in a plating bath are useful in that they act to agitate the solution thus providing for a much more uniform bath concentration (col. 1 lines 38-61).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to dispose an ultrasonic generator into an electrolyte bath as done by Rines and use it in the electrochemical stripping apparatus of Kool et al. because it would allow for a means of agitating the electrolyte solution and thus providing for a much more uniform concentration of the bath.

Regarding claim 11, Kool et al. further discloses that removal of a coating refers to coating that has been severely degraded/corroded (col. 3 lines 7-23).

2. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kool et al. (6,599,416) and Rines (2,744,860) as applied to claim 10 above, and further in view of Zhou et al. (6,402,931).

Regarding claim 12, modified Kool et al. teaches all the limitations of claim 10 mentioned above as well as applying current/voltage pulses during electrolytic coating removal (col. 8 lines 8-17) but fails to disclose two different polarities of voltage/current pulses.

Zhou et al. teaches electrochemical machining of metals and alloys useful for processes such as shaping, polishing, and deburring of metal articles (abstract). Zhou et al. teaches a pulsed current waveform having both anodic (positive) pulses and cathodic (negative) pulses (figure 1 and col. 4 line 63 – col. 5 line19). Zhou et al. further goes on to teach that this addition of cathodic (negative) pulses in between anodic (positive) pulses allows for control of conditions that would otherwise cause for non-uniform metal removal such as consuming hydrogen generated at the tool surface allowing for the minimization of bubble formation in the interelectrode gap and further reducing and/or eliminating the effects of the formation of a oxide film on the metal surface allowing for the film to be more readily broken down and thus resist the formation local islands of oxides/passivity, which tends to resist erosion of the workpiece causing even further non-uniformities in the machined metal layer (col. 7 lines 14-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add cathodic (negative) pulses as taught by Zhou et al. in between the anodic (positive) pulses taught by modified Kool et al. as it would solve a variety of problems that cause non-uniformities in the eroded tool surface such as minimizing bubble formation and breaking down of local oxide islands.

3. Claims 13-14, 17-23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kool et al. (6,599,416).

Regarding claim 13, 17, 18, and 26, Kool et al. teaches an electrochemical stripping system [1] in which electrodes [4, 5] and the article/component [6] are arranged in a receptacle [2] and submersed in an electrolyte [3] (col. 7 lines 6-24) and the electrodes [4,5] and article/component being connected to a power supply/current generator [10] for imposing a potential difference between the article/component [6] and electrodes [4,5] (col. 7 lines 51-63). Kool et al. teaches the current source may be of the pulsed variety providing for a block like structure having a repeated sequence (col. 8 lines 8-17 and col. 13 lines 13-21) but Kool et al fails to specifically disclose forming sequence of pulses having a plurality of **different** blocks (voltage/current amplitudes and pulse interval and shape).

Kool et al. teaches the current source/cell potential can further be "tuned", which relies on adjusting the cell potential to selectively strip or partially strip portions of the metal from the article/component teaching the realization that different applied potentials/currents are more effective at removing certain layers of the coating based on the needs of one skilled in the art would allow for "different blocks" of pulsed current at

different times during the stripping process as necessary to most effectively strip the metal article [7] (col. 9 lines 3-12, col. 8 lines 30-39, figure 5 and 6, col. 10 lines 48-57).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a sequence of current pulses having varying amplitudes in height of the block like structure coinciding to applied voltage/current based on the teachings of Kool et al. that an applied voltage can selectively strip certain partial portions from the article/component and would be well within the scope of one having ordinary skill in the art to adjust these applied potentials/currents as such to allow for greater control of the stripped metal layer during the machining process.

Regarding claim 14, 20, and 21, Kool et al. teaches using a pulsed current/voltage using pulses of 400 msec "on" and 10 msec "off" (col. 13 lines 14-21) and further teaches that voltage varies in a range of a "trace" amount to up to 30 volts meaning that during "off" periods a "trace" potential is still being applied imposing a base current/voltage in between each current pulse; the trace voltage acts a base voltage because the voltage/current never actually is taken to a value of zero potential during processing (col. 8 lines 8-17).

Regarding claim 19, Kool et al. teaches an alloy layer McrAl(X) –type alloy (col. 3 line 17) and the coating layer can further comprise iron, cobalt, or nickel (col. 5 lines 50-56).

Regarding claim 22-23 and 25, Kool et al. teaches using a pulsed current/voltage using pulses of 400 msec "on" and 10 msec "off" (col. 13 lines 14-21, repeating the pulses create a block/square waveform) and further teaches that voltage varies in a

range of a "trace" amount to up to 30 volts meaning that during "off" periods a "trace" potential is still being applied imposing a base current/voltage in between each current pulse; the trace voltage acts a base voltage because the voltage/current never actually is taken to a value of zero potential during processing (col. 8 lines 8-17).

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kool et al. (6,599,416) as applied to claim 13 above, and further in view of Rines (2,744,860).

Regarding claim 15, Kool et al. teaches all the limitations of claim 13 mentioned above but fails to disclose an ultrasound probe being arranged in the container and submersed in the electrolyte.

Rines teaches treatment of a cathode surface [7] submersed in a plating solution [3] with another electrode [5] and a means for vibrating the plating solution perpendicular to the cathode [7] (col. 5 lines 11-30). Rines further teaches the use of ultrasonic generators disposed in a plating bath are useful in that they act to agitate the solution thus providing for a much more uniform bath concentration (col. 1 lines 38-61).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to dispose an ultrasonic generator into an electrolyte bath as done by Rines and use it in the electrochemical stripping in the process of Kool et al. because it would allow for a means of agitating the electrolyte solution and thus providing for a much more uniform concentration of the bath.

5. Claim 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kool et al. (6,599,416) as applied to claim 13 above, and further in view of Zhou et al. (6,402,931).

Regarding claim 16, Kool et al. teaches all the limitations of claim 13 mentioned above as well as applying current/voltage pulses during electrolytic coating removal (col. 8 lines 8-17) but fails to disclose two different polarities of voltage/current pulses.

Zhou et al. teaches electrochemical machining of metals and alloys useful for processes such as shaping, polishing, and deburring of metal articles (abstract). Zhou et al. teaches a pulsed current waveform having both anodic (positive) pulses and cathodic (negative) pulses (figure 1 and col. 4 line 63 – col. 5 line19). Zhou et al. further goes on to teach that this addition of cathodic (negative) pulses in between anodic (positive) pulses allows for control of conditions that would otherwise cause for non-uniform metal removal such as consuming hydrogen generated at the tool surface allowing for the minimization of bubble formation in the interelectrode gap and further reducing and/or eliminating the effects of the formation of a oxide film on the metal surface allowing for the film to be more readily broken down and thus resist the formation local islands of oxides/passivity, which tend resist erosion of the workpiece causing even further non-uniformities in the machined metal layer (col. 7 lines 14-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add cathodic (negative) pulses as taught by Zhou et al. in between the anodic (positive) pulses taught by Kool et al. as it would solve a variety of problems that cause non-uniformities in the eroded tool surface such as minimizing bubble formation and breaking down of local oxide islands.

Regarding claim 24, Kool et al. teaches all the limitations of claim 13 mentioned above but fails to disclose the pulse duration being from 1-10 milliseconds.

Zhou et al. teaches electrochemical machining of metals and alloys useful for processes such as shaping, polishing, and deburring of metal articles (abstract). Zhou et al. teaches a pulse duration in the range of 2-100 milliseconds (col. 8 lines 53-67). Zhou et al. further teaches in order to achieve appropriate conditions during machining of the workpiece the pulse duration should be adjusted to be relatively short (col. 8 lines 53-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the pulse duration to have a short time range as done by Zhou et al. and use in the electrochemical machining process of Kool et al. in order to achieve desired conditions during machining of the workpiece.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Yakulis whose telephone number is 571-272-9807. The examiner can normally be reached on M-F 9:30 AM-7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SUPERVISORY PATENT EXAMINER